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SYSTEM AND METHOD IN WATER-CRAFT OR OTHER STRUCTURE

5 The present relates to a system in a water-craft or a section thereof or in another structure or a section thereof in accordance with the preamble of claim 1 for providing furnishings at least partially, which system comprises a number of prefabricated room units and a water-craft or a section thereof or another structure or a section thereof.

10 The invention also relates to a method in accordance with the preamble of claim 9 for providing furnishings at least partially, which method comprises a water-craft or a section thereof or another structure or a section thereof and at least one prefabricated room unit.

15 It is known from prior art to have systems for arranging room units in a water-craft or another structure so that a prefabricated room unit is brought into the water-craft or other structure, the outboards of which are constructed prior to bringing the room unit into the water-craft/other structure. It is also known to insert a room unit into a water-craft or another structure, which  
20 has in advance been provided with at least a structural outboard and generally also a window and insulation for the outboard. Such a system is disclosed in U.S. Patent No. 6,016,636, where prefabricated cabin modules are brought onto the deck by means of a crane, approximately into their final positions.

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It is also known from prior art to insert prefabricated room units into a water-craft/another structure through specific temporarily arranged openings and transfer them into their final positions by means of special transfer devices. Such systems are disclosed for instance in DE Patent No. 4,024,497 and in  
30 U.S. Patent No. 4,528,928. Various transfer systems and structures for cabins are disclosed e.g. in U.S. Patent No. 6,260,496.

Furthermore, it is known to insert a cabin provided with a balcony into the ship so that the balcony wall is constructed aboard the ship prior to installing the cabin or after the installation, and that the balcony is secured to the ship's hull either before bringing the cabin into the ship or after that.

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Significant disadvantages are, however, associated with the prior art. For instance, the transfer of cabins aboard the ship is time-consuming and the arrangement of temporary openings takes time and leaves marks on the final cladding of the ship. Moreover, the transfer of cabins on the ship may have an impact on the arrangement of stanchions or give cause for relocation or removing of the stanchions during the construction period. In all the above-discussed cases the cladding of the ship requires several man-hours of labour and the working conditions aboard are difficult, whereby the construction time of the ship may be extended.

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An object of the present invention is to eliminate the disadvantages of the prior art and provide an entirely new kind of an arrangement.

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The invention is based on the idea that one or several room units are arranged to be inserted into a water-craft or a section thereof or another structure or a section thereof, and that the system comprises room units, the exterior side portion of which forms a part of the outboard of the water-craft or a section thereof or other structure or a section thereof and/or the interior side portion forms a part of the open inner section of the water-craft or a section thereof or other structure or a section thereof.

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The purpose of the present invention is to provide a prefabricated room unit which comprises an exterior side portion or an interior side portion forming a part of the structural external or internal surface, respectively, of a water-craft or a section thereof or another structure or a section thereof. By this arrangement the room unit's window, window wall, balcony, balcony doors etc. can be constructed in workshops ashore and transported and lifted as

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one unit onto the water-craft or a section thereof or other structure or a section thereof, whereby the work carried out aboard the water-craft or a section thereof or other structure or a section thereof is diminished, the quality is improved and it is possible to shorten the construction time.

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Alternatively, one or several room units are arranged to be inserted into a water-craft or a section thereof or another structure or a section thereof, which arrangement comprises room units, the exterior side portion and/or the interior side portion of which is open when being transferred into the water-craft or a section thereof or other structure or a section thereof, and the actual board section is attached afterwards to the water-craft or a section thereof or other structure or a section thereof. The attachment, sealing and other similar operations may also in this case be carried out via the outboard or the open inner section of the water-craft or the like.

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This purpose may according to the invention be achieved by applying a method for providing furnishings in a water-craft or a section thereof or another structure or a section thereof comprising a water-craft or a section thereof or another structure or a section thereof and at least one prefabricated room unit so that at least one room unit is inserted into the water-craft or a section thereof or other structure or a section thereof and moved aboard the water-craft or a section thereof or other structure or a section thereof into a predetermined location.

25 More precisely, the system and method according to the invention are characterised in what is disclosed in the characterising parts of claims 1 and 9, respectively.

According to a preferred embodiment of the system according to the invention in a water-craft or a section thereof or in another structure or a section thereof for providing furnishings the system comprises a number of prefabricated room units and a water-craft or a section thereof or another structure

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or a section thereof so that one or several room units are arranged to be inserted into the water-craft or a section thereof or other structure or a section thereof, and the system comprises room units, the exterior side portion of which forms a part of the outboard of the water-craft or a section thereof or other structure or a section thereof and/or the interior side portion forms a part of the open inner section of the water-craft or a section thereof or other structure or a section thereof. A room unit according to the system is composed of one or several cabins, rooms or similar units and the exterior side portion and/or the interior side portion consists of a window and/or a wall and/or a balcony. The section of the water-craft may refer e.g. to a compartment of a water-craft, whereby the system may be applied also in case the water-craft is composed of compartments. Thus the water-craft may be furnished already at the so-called compartment assembly stage by utilizing the above-described method, or alternatively it may be furnished, when the water-craft comprises several compartments, or is as one element irrespective of whether the water-craft is composed of compartments or not.

According to a second preferable embodiment of the invention the board of a water-craft's hull or a section thereof or of another structure or a section thereof is substantially open and the overlying decks are supported by a supporting structure/structures, which is/are at the installation stage of the cabins located between every second room unit or spaced by a distance longer than this. The open board may in this context refer even merely to the so-called skeleton structure of a water-craft or a section thereof or another structure or a section thereof with mere steel stanchions and steel beams. Accordingly, the supporting structure may comprise a stanchion, a frame structure or other similar structure, and the distance between the stanchions may be even longer than mentioned above. Then the board section of the water-craft or a section thereof or other structure or a section thereof is installed after the room unit/units has/have been moved into the water-craft or other structure.

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In both above-described systems the width of the opening arranged in the board of a water-craft or a section thereof or another structure or a section thereof is smaller than the total width of two or several room units, when the room units are being inserted into the water-craft or other structure. Then the sealing of the room unit/units is at least partially carried out by connecting the exterior side portion or the interior side portion directly to another exterior side portion or an interior side portion by means of separate cover strips, or by another sealing method, without the side portion being sealed to the hull of the water-craft or a section thereof or other structure or a section thereof. In addition, the side portion includes a floor and/or a ceiling portion to be installed separately and attached to the hull of the water-craft or a section thereof or other structure or a section thereof.

According to a preferred embodiment of the method in accordance with the present invention is provided a method for applying the system for providing furnishings at least partially in the system according to the claims discussed in the foregoing, which system comprises a water-craft or a section thereof or another structure or a section thereof and at least one prefabricated room unit so that at least one room unit is inserted into the water-craft or a section thereof or other structure or a section thereof, and moved on the water-craft or a section thereof or other structure or a section thereof into a predetermined location. After this, next room units are brought in one or several units at the time through an opening arranged in the board of the water-craft or a section thereof or other structure or a section thereof, or through the end thereof, which room units are moved into predetermined locations and after the room unit/units has/have reached its/their final position/-s the exterior side portion thereof is disposed and/or attached and/or sealed to the board, and/or the interior side portion thereof is disposed and/or attached and/or sealed to the board. If the room unit is not, however, provided with an exterior side portion and/or an interior side portion in advance, an alternative method is applied, according to which a separate side portion is disposed and/or attached and/or sealed to the room unit or to the board.

In both above-discussed cases the room unit may comprise one or more cabins, rooms or the like and/or the side portion may comprise one or more windows and/or walls and/or balconies. In addition, the room unit is in the transverse direction of the water-craft or a section thereof or other structure or a section thereof brought in through the board of the water-craft or a section thereof or other structure or a section thereof without any substantial movement in the longitudinal direction of the water-craft or a section thereof or other structure or a section thereof, so that said movement is preferably smaller than the width of the room unit.

By the present invention considerable advantages are provided. Thus the installation time of structures of the water-craft or the like will be shortened and simplified, whereby the overall costs of the water-craft or other structure are reduced considerably. Moreover, the system according to the invention provides more of so-called large outboard rooms aboard the water-craft or other structure, which rooms are more expensive for the customers than normal rooms. Thus the owner of the water-craft or other structure will also get a higher price for the present arrangement and the customer will stay a longer period in the room unit, as the comfort therein has improved.

The room unit according to the invention is lifted aboard the water-craft or a section thereof or to other structure or a section thereof so that inboard cabins and cabins provided with an exterior side portion are inserted directly onto the correct deck or to the correct floor and into the correct position through an opening, which is as wide as about two cabins, rooms or the like. Through the opening are inserted the inboard and outboard cabins facing the opening in the longitudinal direction of the water-craft, the first one of which cabins is inserted through the opening in the transverse direction of the ship approximately into its final position, after which the cabin is moved in the longitudinal direction of the ship behind a stanchion or a similar structure. The second cabin is moved directly into its position substantially without any

movement in the longitudinal direction of the ship. Thus all the cabins of the ship may be prefabricated, as the first outboard cabin will utilize the space located behind the stanchion.

- 5 By supporting the water-craft's deck by the outboard of the water-craft at every second cabin the cabins provided with an exterior or interior side portion may be inserted through openings of final size, the width of the openings being about the same as the total width of two cabins. The ship's inboard cabins may be inserted into the ship through the same opening without ar-
- 10 ranging any specific temporary openings. The advantage achieved by this is that the transfer distance on the ship is very short, temporary openings or removals of stanchions are not necessary and the construction time of the ship may be shortened. A prefabricated cabin provided with a side portion according to the invention may be brought aboard the ship by lifting the
- 15 cabin directly through the board almost directly to its final position in the longitudinal direction of the ship. Stanchions may be installed between the cabins, if required, after the cabins have been lifted onto the ship.

The side portion according to the invention is attached to the cabins before it

20 is lifted onto the ship so that both the cabin and the side portion are lifted simultaneously. The side portion may consist for instance of

1. a window, whereby the cabin is provided with an end wall, to which the ship's window facing outwards or inwards as well as the cladding of the end wall are attached. Thus the water-craft is provided with an opening for window surrounded by the ship structure. The cabin is in-

25 serted in the ship in a conventional manner.

2. an end wall, whereby the cabin is provided with an end wall located on the outer surface of the ship. In this case the ship is provided with an opening substantially of the size of the cabin end or the two cabin ends. The cabin may be transferred to its position in a conventional

30 way or directly through the opening in the outboard. The end wall may preferably extend beyond the boards of the ship, whereby a separate,

to the ship structures attached floor or ceiling is arranged underneath and/or above the wall, which floor or ceiling may constitute an integral part of the cabin structure. Thus the cabin gets more floor area and the view from the cabin is wider. Similar advantages are achieved also by carrying the cabin in through the open inner section, i.e. in the case of a so-called promenade cabin.

3. a balcony, whereby the cabin is provided with a balcony module installed in advance, when being brought into the water-craft. The cabin may be provided with a balcony door and a window or such may be installed later. The cabin may be located in position in a conventional way or directly through an opening in the board.

In the following the invention is described with reference to the attached drawings, in which

Figure 1 shows how the furnishings are provided as a section view of a water-craft or another structure seen from above;

Figure 2 shows the following stage of providing the furnishings as a section view of a water-craft or another structure seen from above;

Figure 3 shows a section view of a water-craft or another structure seen from above;

Figure 4 shows a side view of a water-craft or another structure seen from the side;

Figure 5 shows how the furnishings are provided according to a second embodiment of the invention as a section view of a water-craft or another structure seen from above;

Figure 6 shows a simplified view of the situation of Figure 5 in perspective;



Figure 7 shows an attachment and/or a sealing arrangement seen from above;

5 Figure 7a shows an enlarged view of detail VII indicated in Figure 7; and

Figure 8 shows a sectional view VIII-VIII indicated in Figure 7.

The water-craft or other building comprises a ship 1 according to the embodiment in Fig. 1. The figure shows also room units 2a, 2b, 2c and 2d,  
10 which in this case are preferably cabins. The cabins 2a, 2b, 2c, 2d etc. are prefabricated and provided with an exterior side portion 9 or an interior side portion 10. According to the figure cabin 2a is first inserted through an opening 4 in board 3a, 3b into the water-craft 1 as shown by arrow A, i.e. in  
15 the transverse direction of the water-craft. In order to make the cabin 2a reach its predetermined position 8a it is also moved as shown by arrow B in the longitudinal direction of the water-craft 1. The cabin has also been provided with a formed part 13 in advance, into which part stanchion 14 fits. Next, cabin 2b is inserted through the opening 4 and moved to its predetermined  
20 mined position 8b as shown by arrow A. After this, cabin 2c is moved to its position 8c, first as shown by arrow A through the opening 4 in the board 3a, 3b. An alleyway portion 5 is in this case left between the cabins.

Fig. 2 shows a situation, where the cabins 2a, 2b and 2c are already in their  
25 final positions 8a, 8b and 8c and accordingly, the formed part 13 in cabin 2c faces the stanchion 14 after the cabin 2c has been moved in the direction of arrow B in the longitudinal direction of the water-craft. Finally, cabin 2d is inserted in the direction of arrow A into its final position 8d, whereby the exterior side portions 9, 10 form in this case the outboard of the water-craft.  
30 Similarly, they could also form the interior wall section aboard the water-craft, if the cabins had been moved for instance from the so-called promenade located in the middle of the water-craft. Alternatively, cabins 2a and 2b

could also form the interior wall section of the water-craft not shown in the figure, even if they were lifted aboard through the opening in the board 3a, 3b. Neither need the cabins have the shapes shown in the figure, but they could all have for instance the same shape irrespective of their positions in the water-craft or whether the formed part 13 is needed at all, in case there is no stanchion located in the cabin's predetermined position.

This could be better explained with reference to Figure 3, where the reference number 1 indicates a water-craft or another structure, and the numerals 2a, 2b, 2c, and 2d refer to the room units therein. In this application the numeral 3a represents the outboard of the water-craft 1 and the numeral 3b the interior board surrounding the open inner section 12 of the water-craft or other structure. In this case the inner section consists of a so-called footway, i.e. a promenade, of the ship. The interior board 3b consists of cabins 2a, 2b etc., which in the embodiment have been moved onto the ship through the outboard 3a, i.e. as shown in figures 1 and 2. Alternatively, they could have been taken in even from the promenade's 12 side, i.e. via the interior board 3b, and that being the case the cabins 2c and 2d, for instance, have been inserted first and finally the cabins 2a and 2b. It is, of course, possible that the cabins have been moved onto the ship both via the outboard 3a and the interior board 3b and that there are more than four cabins in the transverse direction of the water-craft, advantageously for instance eight, whereby also more alleyways 5 than the two shown in figure 3 are provided. Also the ends 3c of the water-craft, its section or compartment, are marked in the figure, through which ends the cabins may thus alternatively be inserted into the water-craft.

Fig. 4 shows a side view of a water-craft or another structure, whereby cabins 2c and 2d are visible, if the water-craft according to Fig. 3 is looked from outside, and similarly, cabins 2a and 2b are visible, if the water-craft is looked from the side of the open interior, i.e. from the promenade. Furthermore, if looked from outside, the board 3a and possibly the stanchions 14

are visible, and if looked from inside, the interior board 3b is visible and possibly, due to structural engineering conceptions, also the stanchions 14. In the interior the side portions may consist e.g. of merely a window 9a or a wall 9b and the outboard sections either of a balcony 9c or merely a window 9a.

Figure 5 shows an alternative furnishing concept, where the cabins 2a, 2b, 2c and 2d are brought into a water-craft or another structure in accordance with figures 1 and 2. Figure 5 also shows a stanchion 14, which fits into the formed part 13 when room unit 2c is moved as shown by arrow B, as well as a steel construction 3. The exception in this version is that the room units are not provided with a side portion 9, 10 in advance, but the side portion is not disposed, attached and/or sealed until the room units have been moved onto the water-craft in accordance with arrow A. The side portion may also be attached prior to the installation of the room units, whereby the room units are brought into the water-craft in a conventional way.

Figure 6 shows the situation of Figure 5 simplified and seen obliquely from below at the stage, when cabin unit 2b is moved to rest upon the steel construction 3 of the water-craft. The steel construction consists of vertical and horizontal stanchions 14 and in this case also of a deck construction 11. In addition, the figure shows the board 3a and the opening 4, through which the cabin units are inserted into the water-craft.

Figure 7 shows a sealing arrangement, according to which the room units 2a, 2b, 2c, 2d etc. are sealed to the hull 3 of the water-craft or other structure by means of a profile 16 and a seal 19, of which arrangement detail VII is extracted and shown in Fig. 7a. Naturally, the arrangement also includes fixing means, which are not shown in the figure. Also the side portion 9, 10 is clearly shown in the figure, which portion may also have another than a right-angled shape, for instance a so-called oriel. In this case the side portion

includes a floor and/or ceiling portion to be mounted separately and indicated by the reference number 17.

Figure 8 shows a section view A-A of Figure 7. In this figure the lower beam 5 15 of the room unit is preferably attached by welding to the deck 11 of the water-craft by utilizing e.g. shims. The frame 18 of the side portions 9, 10 is sealed to the board 3a, 3b of the water-craft by a profile 16, which is secured to the side portion by fixing means, e.g. by a screw or the like, either before inserting the room unit into the water-craft or after that. The profile is 10 sealed to the side portion e.g. by a rubber seal, as shown in figure 7, which seal is squeezed by tightening the fixing means. The profile is tightened to the board by fastenings means, e.g. by a sealing compound or by a stud reaching through the profile into the board. Similar fastening may be used when the side portion is attached e.g. to a stanchion 3, which carries the 15 outboard, or between two adjacent side portions so that the profile is attached by a screw to a first side portion and then by a stud to a second side portion.

It is apparent to a person skilled in the art that the invention is not limited to 20 the above-described embodiments, where the invention is described by way of example, but various applications of the invention are conceivable in the scope of the inventive conception defined by the appended claims.